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| 10/588,466 | 05/17/2007 | Laurent Marc Philippe | M03B171 | 8739 |

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| EXAMINER | |
|---|---|
| PAUL, ANTONY M | |
| ART UNIT | PAPER NUMBER |
| 2837 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

LORETTA.SANDOVAL@EDWARDSVACUUM.COM

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/588,466 | PHILIPPE ET AL. | |
| | Examiner | Art Unit | |
| | ANTONY M. PAUL | 2837 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *31 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1 thru 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 thru 5 and 7 thru 19* is/are rejected.

7)☒ Claim(s) *6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 July 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/31/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### Drawings

1. Figure 1 is prior art (see spec, page 2, line 14) should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### Claim Objections

2. Claims 1, 13 and 19 are objected to because of the following informalities: In regard to claim 1, the phrase, "adapted to", it has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. In re Hutchison, 69 USPQ 138;

In regard to claim 13, the phrase, "when the drive control causes the system to operate for transient periods in an overload condition the power to the motor is controlled", may be corrected to provide a coma between "…condition, the power…" Appropriate correction is required.

3. Claim 19 recites the limitation "said monitored state" in claim 19. There is insufficient antecedent basis for this limitation in the claim.

**Claim Rejections – 35 USC § 102**

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 7, 8 and 12-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Sasaki et al. (6,244,825).

| **Claims:** | **Sasaki et al. teaching:** |
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| **Claim 1:** A pumping system comprising: | Figs. 1-2 (or 8-11) shows a pumping apparatus 12 comprising: |
| a pumping mechanism; | a vacuum pump 14; |
| a motor for driving the pumping mechanism; | a motor 16 drives the pump 14; |
| a drive control for controlling the motor; and | the control device 10 (or control means 20) controls the motor 16; |
| means for monitoring at least one state within the system; and | power detector 18 monitor the power consumption of the motor 16 of the pumping apparatus 12 (col. 3, lines 3-6; voltage/current, see col. 7, lines 50-54; power consumption state W or Speed state R via speed detection 64, see figs. 6, 11); |
| wherein the drive control is adapted to cause the system to operate for transient periods in an overload condition and | control means 20 cause the motor 16 of the pump apparatus 12 to operate in an overloading condition such as when the |

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| | power consumption of the motor 16 being equal to or greater than a predetermined value (col. 5, lines 4-12) and transient periods read on to the time periods associated with the higher power consumption level W, where the corresponding speed R4 of the motor 16 is the highest during the overload condition (see time periods in fig. 6 associated with increase in power consumption [W] from a low level to a high level) and |
| to control the power to the motor when the system is operating in said overload condition dependent on the level of said monitored state so as to avoid said state from exceeding said operational limit. | the control means 20 controls the power supplied to the motor 16 based on detecting (controller 24 detects via power detector 18, fig.1) an overload condition such as when the power consumption of the motor 16 being greater than a preset value (the power consumption level W or the speed level R read on to the monitored state as power consumption W depend on the speed R as shown in fig. 6, where power consumption W of the motor 16 is controlled by adjusting the speed R of the motor 16) and the power consumption is controlled so as not to exceed a warning zone B (or allowable load, fig.1) by decreasing the speed of the motor 16 to a lower level R1 as in fig.4 (or power consumption is controlled so as not to exceed a higher power consumption level W by adjusting the speed to a lower speed level R3 in fig.6; decrease speed, see col. 4, lines 5 thru 24). |
| **Claim 2:** The system according to claim 1, wherein the performance is improved by said drive control increasing the power supplied to the motor to a level which can result in said monitored state exceeding a predetermined operational limit. | Read on to the improved pumping apparatus 12 as Sasaki et al. teaches protection of the pumping apparatus 12 by power detection, controlling the power consumption of the pump motor 16 by adjusting the speed (see figs. 4, 6 & col. 3, lines 51-57; improvement in operating efficiency, see col. 5, lines 21-52; service life is extended, see col. 8, lines 19-21) and control means 20 increases the power |

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| | consumption level W of the motor 16 associated with corresponding increase in speed R and fig. 6 shows a speed state exceeding a lower speed level R3 associated with increase in power consumption to an operation point E (see fig. 6) or fig. 4 shows power consumption exceeds a reference value (towards zone B) associated with a higher speed R2. |
| **Claim 3:** The system according to Claim 1, wherein the drive control causes the system to operate in an overload condition when a load on the motor requires increased power supply to the motor. | Control means 20 cause the pumping apparatus 12 to operate in an overload condition such as when the power consumption W (read on to the load) of the pump motor 16 is the highest (figs.4, 6). |
| **Claim 4:** The system according to claim 1, wherein the drive control does not limit said power unless said state exceeds a predetermined lower limit. | Control means 20 limiting power depends upon the power consumption and/ speed of the motor 16.<br>Fig.4 shows power consumption restricted to a lowered state (towards point D) where speed just exceeded a lower limit R1. |
| **Claim 5:** The system according to claim 4, wherein above said predetermined lower limit, said drive control gradually varies power dependent on said monitored state. | Fig. 4 shows a gradual increase of power consumption (towards point A) associated with the gradual increase of speed above a predetermined lower speed limit R1, where the control means 20 variably adjust the power based on speed detection 64 (fig.11). |
| **Claim 7:** The system according to claim 1, wherein the drive control controls the power of the motor by limiting the current supplied to the motor by adjusting the voltage supplied to the motor. | Control means 20 (via inverter 22) adjust the power supplied to the motor 16 and Sasaki et al. teaches that an inverter 22 changes voltage or current (see col. 7, lines 65-67). Limiting current read on to limiting power consumption to a lower state (corresponding to a lower speed state, see figs.4, 6). |
| **Claim 8:** The system according to claim 7, wherein the drive control comprises programmable means for setting a maximum allowable current in said motor so as to the extent to which the system can be overloaded. | Control means 20 includes a programmable means such as the controller 24, which preset maximum current value such as the maximum power consumption value of the motor 16 (see col. 4, lines 12-24) and when equal to or greater than this value, the pumping system 12 is in an overloaded state (higher power consumption associate with |

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| | overloading is shown in fig.6). |
| **Claim 12:** The system according to claim 1, wherein said monitored state within the system is selected from the group of parameters comprising a pressure, a current, a voltage, an impedance, or a temperature. | Monitored state read on to the power consumption of the motor 16 using the power detector 18 of the apparatus 12 (sensing voltage/current, see col.7, lines 50-56) (or sensing impedance read on to detecting a load of the motor, see col. 8, lines 2-3). |
| **Claim 13:** The system according to claim 1, wherein the drive control comprises means for receiving input from a sensor for monitoring the at least one state within the system, and<br><br>when the drive control causes the system to operate for transient periods in an overload condition<br><br>the power to the motor is controlled to avoid the at least one state from exceeding the predetermined operational limit. | Control means 20 includes a controller 24, which receive power detections information from a sensor such as the power detector18 (alternatively a torque detector 58 or a speed detector 64, see figs 10-11),<br><br>(overloading time periods shown in fig.6 associated with higher power consumption corresponding to higher speed of the motor 16)<br><br>Figs. 4-6 shows power consumption of the motor 16 is controlled by control means 20 (via inverter 22) based on power consumption (via detection 18, fig. 1) exceeding a value set by controller 24. Fig. 4 shows power consumption not to exceed a power consumption warning zone B or not to go above an allowable load (or fig. 6 shows power not to exceed a power consumption point E). |
| **Claim 14:** The system according to claim 13, wherein the sensor is for sensing a parameter selected from the group comprising gas pressure, temperature, voltage, or impedance within the system. | Pumping apparatus 12 includes a sensor such as the power detector 18 sensing voltage (col.7, lines 50-56) (or sensing impedance read on to detecting a load of the motor (see col. 8, lines 2-3). |
| **Claim 15:** The system according to claim 1, wherein the drive control comprises a variable speed drive for controlling the power to the motor dependent on the level of said monitored state thereby avoiding said state from exceeding said operational limit. | Drive control 10/20 includes a variable speed drive such as the controller 24 (controller controls the power consumption of the motor 16 by varying the speed, see col. 3, lines 26-33, col. 4, lines 5-61). Power consumption level W (fig.6) is monitored via power detection 18 (fig.1) and power consumption is controlled not to exceed an operation point by controlling |

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| | the speed level (see figs. 4-6 and explanation in claim 1). |
| **Claim 16:** The system according to claim 1, wherein the drive control comprises analogue means for controlling the power to the motor dependent on the level of said monitored state thereby avoiding said state from exceeding said operational limit. | Control means 20 includes an analogue means such as the inverter 22 (or controller 24 as an analogue circuit, see col. 8, lines 4-6) for controlling the power supplied to the motor 16, where the power consumption level [W] depend on the speed R (fig.6) and other limitations are explained in claim 1. |
| **Claim 17:** The system according to claim 1, wherein the drive control is operable to prevent said system from operating in an overload condition. | Control means 20 adjust the power supplied to the pump motor 16 by controlling the speed of the pump motor 16 (figs 4-6) so as to prevent the overloading of the motor 16 or the pumping apparatus 12. |
| **Claim 18:** The system according to claim 1, wherein said pumping mechanism is a vacuum pumping mechanism. | Vacuum pumping mechanism 14 (figs.1-2). |
| **Claim 19:** A method of controlling a pumping system comprising:<br><br>a pumping mechanism;<br><br>a motor for driving the pumping mechanism; and<br><br>a drive control for controlling the power to the motor,<br><br>wherein said method comprises improving the performance of the system by causing the system to operate for transient periods in an overload condition which can cause said monitored state to exceed a predetermined operational limit, and, | Sasaki et al. teaches a pumping method using Figs. 1-2 (or 8-11) comprising:<br><br>a vacuum pump 14 (figs 1-2);<br><br>a motor 16 drives the pump 14;<br><br>the control means 10 or 20 controls the power supplied to the motor 16 (via inverter 22);<br><br>Read on to the improved pumping apparatus 12 as Sasaki et al. teaches protection of the pumping apparatus 12 by power detection, controlling the power consumption W of the pump motor 16 by adjusting the speed R of the motor 16 (see figs. 4, 6 & col. 3, lines 51-57; improvement in operating efficiency, see col. 5, lines 21-52; service life is extended, see col. 8, lines 19-21) and teaches operation of the pump apparatus 12 for transient periods such as the time periods associated with the higher power |

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| | consumption level W, where the corresponding speed R4 of the pump motor 16 is the highest during the overload condition (see time periods in fig. 6 associated with increase in power consumption [W] from a low level to a high level where speed is highest) and fig. 4 shows higher power consumption at zone B, exceeding a reference value, where speed R2 is the highest) and Sasaki teaches the power consumption being greater than a predetermined value and the performance of the pumping apparatus 12 is improved such as by protecting the pump 14 and pump motor 16 from being overloaded by adjusting speed (see col. 5, lines 4-12), |
| when operating in said overload condition, controlling the power to the motor dependent on the level of said monitored state thereby avoiding said state from exceeding said operational limit. | Control means 20 (via inverter 22) controls the power supplied to the motor 16 based on detecting the power consumption level W (via power detection 18) and/ based on detecting the speed level (see figs. 4, 6 & 11) and the power consumption is controlled so as not to exceed a warning zone point B (or allowable load) by decreasing the speed of the motor 16 to a lower level R1 as in fig.4 (see claim 1 for detailed explanation). |

6. Claims 9-12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by conventional prior art figs. 1-2.

| **Claims:** | **Conventional prior art figs. 1-2** |
|---|---|
| Claims 9 thru 12 and 14: | Applicants' have provided figs. 1-2 as prior arts (see applicants' spec., pages 1-4). The limitations of claims 9-12 and 14 are prior art as they read on to the teaching of applicants' admitted prior art figs. 1-2.<br><br>In regard to claims 9-10, temperature read on to the thermal load of the motor 51; In regard to claim 11, formula is taught with |

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| | respect to fig. 1 and associated teaching (see page 2, lines 14-23); In regard to claims 12 and 14, a selected state from parameters read on to current/voltage supplied to the motor 51, temperature read on to the motor thermal load, pressure read on to the pressure associated with the process gas in the chamber or pump pressure, impedance read on to the motor impedance. |

**Claim Rejections – 35 USC § 103**

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. in view of Mallick, Jr. et al. (4,476,423).

In regard to claim 9, Sasaki et al. do not mention said state is a temperature within the system.

Mallick, Jr. et al. teaches motor temperature detection state (see col. 3, lines 65-68, col. 28, lines 52-56, figs.10-11; motor thermal state, see fig. 9 & col. 27, lines 50-60) of a motor apparatus (starts a pump, see col.35, lines 40-42).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the temperature state within the system of Mallick, Jr. et al. in the system of Sasaki et al. because a micro-processor based system prevents the

number of motor starts to protect the motor (see col.1, lines 62-64, col. 2, lines 3-6 & col. 40, lines 37-40).

In regard to claim 10, Sasaki et al. do not mention said state is a function of the thermal load of the motor or drive or the pumping mechanism.

Mallick, Jr. et al. teaches thermal load such as the temperature detection of the motor apparatus (see explanation in claim 9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the state as a function of thermal load of Mallick, Jr. et al. in the system of Sasaki et al. because a micro-processor based system prevents the number of motor starts to protect the motor (see col.1, lines 62-64, col. 2, lines 3-6 & col. 40, lines 37-40).

**Allowable Subject Matter**

9. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Information disclosure Statement**

Examiner acknowledges the receipt of prior art documents including the international search report dated 07/31/2006.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTONY M. PAUL whose telephone number is

(571)270-1608. The examiner can normally be reached on Mon - Fri, 7:30 to 5, Alt. Fri, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benson Walter can be reached on (571) 272-2227. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BENTSU RO/
Primary Examiner, Art Unit 2837

/Antony M Paul/
Examiner, Art Unit 2837 03/23/2010